AMENDED CLAIMS

[received by the International Bureau on 21 April 2005 (21.04.2005);
claims 1-6 amended, claims 7-20 added]

1(amend). An on-channel repeater which receives the signal on one channel and distributes the signal on the same channel, the on-channel repeating apparatus comprising:

a receiving means for receiving a Radio Frequency (RF) broadcast signal transmitted from outside;

a demodulating means for demodulating the RF signal received in the receiving means into a baseband signal;

an equalizing means for equalizing the baseband signal obtained from the demodulation in the demodulating means to thereby obtain a baseband output signal;

a modulating means for modulating the baseband output signal from the equalizing means into an RF signal; and

a transmitting means for transmitting the RF signal obtained from the modulation in modulating means.

2(amend). The on-channel repeater as recited in claim 1, wherein the demodulating means includes:

an intermediate frequency (IF) down-converting unit for down-converting the received RF signal into an IF signal; and

a demodulating unit for demodulating the IF signal obtained from the frequency down-conversion into a baseband signal.

3(amend). The on-channel repeater as recited in claim 1, wherein the modulating means includes:

a modulating unit for modulating the baseband output signal outputted from the equalizing means into an IF signal; and

an RF up-converting unit for up-converting the IF signal into an RF signal.

4(amend). An on-channel repeating method for receiving the signal on one channel and distributing the signal on the same channel, the on-channel repeating method comprising the steps of:

a) receiving a Radio Frequency (RF) signal transmitted from outside;

b) demodulating the RF signal into a baseband signal;

c) equalizing the baseband signal to thereby obtain a baseband output signal;

d) modulating the baseband output signal into an RF signal; and

e) transmitting the RF signal obtained from the modulation.

5(amend). The method as recited in claim 4, wherein the step b) includes:

b1) down-converting the received RF signal into an intermediate frequency (IF) signal; and

b2) demodulating the IF signal obtained from the frequency down-conversion into a baseband signal.

6(amend). The method as recited in claim 4, wherein the step d) includes:

d1) modulating the baseband output signal outputted from the equalization in the equalizing means into an IF signal; and

d2) up-converting the IF signal into an RF signal.

7(new). The on-channel repeater as recited in claim 1, further comprising:

a local oscillating means for providing a reference frequency signal to the demodulating means and the modulating means.

8(new). The on-channel repeater as recited in claim

7, wherein the demodulating means extracts a carrier frequency and a sampling timing offset, and the modulating means modulates the baseband output signal into an RF signal based on the carrier frequency and the sampling timing offset.

9(new). The on-channel repeater as recited in claim 7, further comprising:

a Global Positioning System (GPS) receiving means for receiving a GPS reference signal to synchronize frequency of the transmitting signal with frequency of received signal and dividing the GPS reference signal for the demodulating means, the modulating means, and the local oscillating means.

10(new). The on-channel repeater as recited in claim 1, wherein the demodulating means includes:

an IF down-converting unit for down-converting the received RF signal into an IF signal; and

a demodulating unit for demodulating the IF signal obtained from the frequency down-conversion into a baseband signal, and

the modulating means includes:

a modulating unit for modulating the baseband output signal outputted from the equalizing means into an IF signal; and

an RF up-converting unit for up-converting the IF signal into an RF signal.

11(new). The on-channel repeater as recited in claim 10, further comprising a local oscillator for providing a reference frequency signal to the IF down-converting unit and the RF up-converting unit.

12(new). The on-channel repeater as recited in claim

11, wherein the demodulating unit extracts a carrier frequency and a sampling timing offset, and the modulating unit modulates the baseband output signal into an IF signal based on the carrier frequency and the sampling timing offset.

13(new). The on-channel repeater as recited in claim 11, further comprising:

a GPS receiving means for receiving a GPS reference signal to synchronize frequency of the transmitting signal with frequency of received signal and dividing the GPS reference signal for the demodulating unit, the modulating unit and the local oscillator.

14(new). The method as recited in claim 4, wherein the modulation and demodulation at the steps b) and d) are carried out based on a reference frequency signal provided by a local oscillator.

15(new). The method as recited in claim 14, wherein a carrier frequency and a sampling time offset are extracted at the step b), and the baseband output signal is modulated into an RF signal at the step d) based on the carrier frequency and the sampling time offset.

16(new). The method as recited in claim 14, further comprising a step of:

f) generating an oscillation signal needed for the demodulation and modulation at the steps b) and d) by dividing a Global Positioning System (GPS) reference signal received in a GPS receiver.

17(new). The method as recited in claim 4, wherein the step b) includes:

b1) down-converting the received RF signal into an IF

signal; and

b2) demodulating the IF signal obtained from the frequency down-conversion into a baseband signal, and

the step d) includes:

d1) modulating the baseband output signal outputted from the equalization in the equalizing means into an IF signal; and

d2) up-converting the IF signal into an RF signal.

18(new). The method as recited in claim 17, wherein the frequency down-conversion at the step b1) is performed based on a first reference frequency signal provided by local oscillator, and

the frequency up-conversion at the step d2) is carried out based on a second reference frequency signal provided by the local oscillator.

19(new). The method as recited in claim 18, wherein the a carrier frequency and a sampling time offset are extracted from the IF signals obtained from the frequency down-conversion at the step b), and

the baseband output signal is modulated into an IF signal at the step d) based on the carrier frequency and the sampling time offset.

20(new). The method as recited in claim 18, further comprising a step of:

g) generating an oscillation signal needed for modulation/demodulation and IF/RF frequency conversion by dividing the GPS reference signal received in the GPS receiver.